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AUTHOR Van Kleeck, Anne
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ABSTRACT

This paper integrates a recent conceptual shift in middle childhood language acquisition research--the study of metalinguistic development--with a Piagetian perspective on cognitive development to propose a theoretical framework from which to consider language development during this period. The paper first defines metalinguistics and then uses a Piagetian framework to distinguish between the reasoning abilities of the preoperational and the concrete operational child. It then discusses some general cognitive skills underlying all the various manifestations of metalinguistic awareness. It suggests that the metalinguistic skills that emerge during the preoperational stage reflect the child's focus and abilities during this period and that changes in reasoning that emerge with the onset of concrete operations result in success on more complex metalinguistic tasks. Developmental changes in children's performance on the diverse set of skills considered metalinguistic in nature are cited as evidence in support of these claims. (FL)

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Piaget and metalinguistics: A developmental overview

Anne Van Kleeck

University of Texas at Austin

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Piaget and Metalinguistics: A Developmental Overview

Anne Van Kleeck

University of Texas at Austin

Researchers in language acquisition freely admit the very scattered nature of information available on development during the middle childhood years. They are saying, in effect, that as a field we lack a general framework for conceptualizing development during this period. This paper integrates a recent conceptual shift in middle childhood language acquisition research--the study of metalinguistic development--with a Piagetian perspective on cognitive development to propose a theoretical framework from which to consider language development during this period.

Language development during this period of middle childhood may be thought of in terms of two qualitatively different achievements (after Hakes, Evans, & Tunmer, in press): (1) the continued development of primary linguistic skills, i.e., understanding and producing longer and more complex sentences, and (2) the emergence of metalinguistic skills, the ability to consciously reflect upon the nature and properties of language. This second aspect of language development--that of burgeoning metalinguistic awareness--is the focus of this discussion paper.

The discussion begins by defining metalinguistics. Next, using a Piagetian framework to distinguish between the reasoning abilities of the preoperational and the concrete operational child, some very general cognitive skills underlying all the various manifestations of metalinguistic awareness are discussed. It is suggested that the metalinguistic skills which emerge during the preoperational stage reflect the child's focus and abilities during this period.

The changes in reasoning that emerge with the onset of concrete operations result in success on more complex metalinguistic tasks. Developmental changes in children's performance on the diverse set of skills considered metalinguistic in nature are cited as evidence in support of these claims.

Metalinguistics Defined

The distinction between primary linguistic and metalinguistic skills was best stated by Cazden (1976):

> It is intuitively obvious to us as language users that when either speaking or listening, our focal attention is not on speech sounds, nor even on larger units such as words or syntactic patterns. Our focal attention is on the meaning, the intention, of what we or someone else is trying to say. The language forms are themselves transparent; we hear through them to the intended meaning. As the Duchess rightly says in Alice in Wonderland, "and the moral of that is--take care of the sense and the sounds will take care of themselves."
>
> However, it is an important aspect of our unique capacities as human beings that we can not only act, but reflect back upon our actions; not only learn and use language, but treat it as an object of analysis and observation in its own right. Meta-linguistic awareness, the ability to make language forms opaque and attend to them in and for themselves, is a special kind of language performance, one which makes special cognitive demands, and seems to be less easily and less universally acquired than the language performance of speaking and listening (p. 603).

Cazden uses the transparent versus opaque metaphor to capture the distinction between primary linguistic and metalinguistic skills. Various other ways

of conceptualizing the differences between these two aspects of linguistic skill have been offered, all of which offer clarity to the distinction. Some suggest that primary linguistic skills are unconsciously used, i.e., that language users are generally unaware of the linguistic processing by which they give meaning to messages. This is contrasted with a more conscious awareness characteristic of metalinguistic skills, whereby one focuses attention upon the actual form of the linguistic message (Hirsh-Pasek, Gleitman, & Gleitman, 1978; Slobin, 1978). Read (1978) likens primary linguistic skill (speaking and listening) to knowing something and metalinguistic skill to knowing that one knows it. Others have spoken of linguistic skill as implicit knowledge and metalinguistic skill as explicit reflections and manipulations of language (Levelt, Sinclair, & Jarvella, 1978). Franklin (1979) discusses primary linguistic skills as performance-in-context, where language is "readily conceptualized in pragmatic, means-end terms" (p. 199). This contrasts with reflective performance, wherein the linguistic medium "that ordinarily has the status of instrumentality or means to an end then assumes a different character; it is disembedded from the context of ongoing action and becomes an 'object' which can be inspected, operated upon, related to other 'objects,' and so forth" (p. 199). In general then, metalinguistic awareness is manifested when language temporarily becomes the <u>object of</u> thought rather than functioning, as it does in most ongoing discourse, as a <u>vehicle for</u> the transmission of thought.

<u>Cognitive Strategies Underlying Metalinguistic Skills</u>

Since Chomsky's publication of <u>Language and Mind</u> in 1968 in which he suggested that linguists should also be cognitive psychologists, language development research has evidenced a concerted effort to determine cognitive correlates and determinants of language acquisition, pioneered by the work of Bloom

(1970, 1973). From these efforts has arisen a general notion that certain aspects of cognitive development appear to be necessary, although not sufficient, prerequisites for certain aspects of linguistic development. To date, this research has focused mainly on the earliest stages of language development. Attempts have been made to tie early linguistic accomplishments with the cognitive achievements accrued during the sensorimotor period of development in infancy. With a few notable exceptions (e.g., Ingram, 1975, 1976; Sinclair & Ferreiro, 1970; Tremaine, 1975), there has been little effort to determine correspondences between cognitive and linguistic advances in later stages of development. Indeed, Furth (1969) suggested that to attempt to do so would be to misconstrue the nature of language, with its primary purpose as a tool for communication. As children learn more about the shared linguistic form of their particular linguistic community, their language becomes better suited to the purpose of communication and simultaneously decreases in its capacity to directly reflect underlying cognitive structure.

This caution is only necessary if one continues to search for a direct correspondence between increasing cognitive knowledge and learning to map that knowledge linguistically, i.e., being able to semantically represent what is cognitively known. There are undoubtedly other ways that cognitive growth can influence linguistic advances besides being reflected in the semantic content of language. Indeed, recent work relating to the pragmatic aspect of language development has sought to establish some of these less direct correspondences. For example, Bates and her colleagues (Bates, Camaioni, & Volterra, 1975) found that a child's attainment of the ability to invent new means to familiar ends which occurs in sensorimotor Stage 5 was a cognitive prerequisite for gestural performatives. Words were used in the same performative sequences in Stage 6. It is not that the children talked <u>about</u> means/end relationships, but rather that they began to use language, as they would any other "object", as a means to an end.

It is likely that the influence of cognitive advances on later stages of language development are likewise of this less direct nature, i.e., that it does not always consist of a direct translation of cognitive knowledge into semantic representations of that knowledge. Because the linguistic medium itself is an "object" in the child's environment, cognitive advances in which the child learns new ways of reasoning about or acting upon other objects in the environment would also be reflected in the ways that the child learns to act upon language. It is precisely this less direct type of influence of cognition on language development that has been postulated for the flowering of metalinguistic abilities in the middle childhood years.

In general, a compelling argument can be made that the processes involved in carrying out many metalinguistic skills are the same as those which evolve during the concrete operational stage of cognitive development (Hakes et al., in press). Such a stance is theoretically appealing when one analyzes the processes that appear to be involved in various metalinguistic skills. Furthermore, it is indirectly supported by a growing body of empirical evidence on the development of these skills. These studies generally show that children begin having success on a wide variety of metalinguistic tasks at around 6 to 7 years of age. This is the same age they would be expected to be making the transition into concrete operations.

To date, the study by Hakes et al. (in press) is the only one that has directly addressed the issue of a relationship between concrete operations and metalinguistic skills. This was done by measuring skills in both domains (a set of conservation and metalinguistic tasks) across the 4 to 8 year age range. The resulting correlations between the tasks provide promising initial evidence that these skills are indeed manifestations of a single underlying development. Hakes et al. propose "that this underlying development is the same as that which

underlies the development of concrete operational thought" (p. 27). To be sure, there is evidence of some emerging metalinguistic ability during the preoperational stage of cognitive development, and these skills reflect the child's focus and abilities during this period. It is argued, however, that many of these skills are not truly metalinguistic in nature. Those which are metalinguistic have simpler tasks demands which are within the capacity of the preoperational child. The general position taken here is the same as that forwarded by Hakes and his colleagues--at the onset of concrete operations one witnesses a flowering of metalinguistic abilities across a wide range of superficially dissimilar metalinguistic tasks.

Metalinguistic performance in the preoperational stage

Several characteristics of children's thought in the preoperational stage of cognitive development offer explanation for their failure on many types of metalinguistic tasks, and their success on others. Preoperational children's thought is characterized by their being able to attend to only one aspect of a given situation at a time. Piaget refers to this as centration. For example, in a conservation task involving continuous quantity, a child is first presented with two identical beakers containing equal amounts of water, and then observes the contents of one being poured into a taller, narrower beaker. The preoperational child will focus on only the height of the column of water and will not consider the relationship between the height and width simultaneously. The child thus believes the taller beaker contains more water. A related characteristic of children's thought in this stage of development is that it lacks reversibility--they cannot shift back and forth between aspects of a situation. In the conservation task, they focus only on the post-transformational state of the water and fail to consider how this relates to the pre-transformational state when the amounts of water were perceptually equal.

In metalinguistic performance, the tendency to centrate is reflected in a child's capacity to focus on one component of language at a time--either form or content, but not both simultaneously. Furthermore, they are unable to shift focus within one component of language, e.g., from one meaning of a particular form to an alternate meaning of that same form. As such, the preoperational child will experience success on those metalinguistic tasks which do not require more than one focus simultaneously. Another characteristic of the preoperational child is that he or she is strongly attuned to the semantic content of messages. The communicative function of language is paramount--conveying and interpreting meaning is the overriding goal in listening and in speaking. While adults also generally focus on meaning in message formulation and comprehension, they are capable of shifting focus of attention to the form of a given message and simultaneously retaining meaning.

The metalinguistic performance of children in this cognitive stage can be characterized in two ways. First, those metalinguistic skills which preoperational children do possess serve the communicative function of language that children in this stage are focused upon. Flavell (1977) refers to this subset of metalinguistic skills as metacommunicative--"namely, the ability to take a verbal communicative message as a cognitive object and analyze it" (p. 178). Second, on other metalinguistic tasks which require subordinating the communicative function of language, preoperational children often perform incorrectly due to their constraint of being able to focus on only one aspect of the linguistic code. Most often this is the semantic focus, but occasionally, there is a focus on linguistic form. The point is that children in this stage are limited to focusing on one aspect of the code at a time. These two tenets regarding metalinguistic development in the preoperational child are in fact well supported by available evidence.

Metalinguistic skills serving the communicative function of language. The earliest emerging metalinguistic skills in the literature are those which enhance communication. Skills often considered metalinguistic in nature which serve this function include (1) correcting or revising one's own speech in response to self-monitoring or listener feedback and (2) learning to adapt to the age, status, background, and/or special needs of one's listener. Even as young as two years of age, at the onset of the preoperational stage, children demonstrate some skill in these areas. Gallagher (1977) provided evidence that in the earliest stages of language development (Brown's Stage 1, MLU= 1.5) children either repeat or, more frequently, attempt to make revisions or corrections in their own speech when there has been an indication of communication failure (e.g., to an adult questioning "What?").

Not only do very young children respond to listener indications that there has been a communication failure, they are also capable of indicating when they have failed to comprehend a message produced by another. Very young children will often interject "huh?" or "what?" into a conversation (although this may not always indicate a failure to comprehend a message but may sometimes serve to keep the interaction going). Older children can be more explicit in pinpointing where the breakdown occurred, as evidenced by the following interlude with a child of 4;9 (from Marshall & Morton, 1978):

Adult: You look elegant in your new dress.
Child: What does elegant mean?

There is also evidence that children begin adapting to the unique needs of their listener at a surprisingly young age. Schiff and Ventry (1976) report that 2 year old hearing children born to deaf parents used two different systems to communicate--one used with hearing people and the other with deaf people. These children used more gesture, shorter utterances, and more deaf-like distortions with their deaf mothers than with a hearing adult. Similar sensitivity to the

special needs of the listener has been widely documented for 3 and 4 year olds. Compared to language addressed to peers or adults, four year olds use shorter, simpler language when addressing 2 year olds (Shatz & Gelman, 1973) and when addressing developmentally delayed peers (Guralnick & Paul-Brown, 1977). When reporting a past event, 3 and 4 year olds adjust their language according to whether the listener was present at the past event or not (Menig-Peterson, 1975). Likewise, 3 and 4 year olds are more explicit in their messages addressed to a listener they are told is blind than they are in messages addressed to a listener who can see (Maratsos, 1973).

Preoperational children also demonstrate their awareness that speech and language behaviors differ according to characteristics such as age, status, role, etc. by their role-taking abilities. Andersen (1977) had children 4 to 7 years of age do the voices of puppets for a father, mother, and baby and for a doctor, nurse, and child patient. She found that even her youngest subjects adjusted their speech to differentiate among the three family roles.

Preoperational children are also aware of alternation rules, i.e., that one can vary the surface structure of language to convey one particular pragmatic intent. Bates (1976) tested the awareness of these social rules with Italian children by having them judge which request would be more likely to get sweets from an old lady puppet, "I want a sweet" or, "I would like a sweet." As young as 4½ years, children were able to fairly consistently choose the least direct request as the nicer one. While preoperational children can make these alternation judgments, "Bates suggests that not until seven or eight years of age does the child become able to manipulate both surface syntactic form and the content to achieve communicative goals" (Miller, 1978, p. 425).

While skills such as the above are often cited as examples of metalinguistic awareness (Clark, 1978; Sinclair, 1978; Marshall & Morton, 1978), it is

questionable that they should be categorized as such. In the original definition of metalinguistic awareness given in this paper, it was pointed out that skills reflecting such an awareness generally de-emphasize the communication function of language, disembedding the linguistic medium from ongoing discourse. Metalinguistic abilities "involve reflecting upon the properties of language as opposed to those involved in using it to communicate" (Hakes et al., in press, p. 26). The skills just discussed, on the contrary, do not de-emphasize the communicative function, but actually serve to enhance it. And yet, certainly in the case of revisions, it does seem that some degree of awareness or focus upon the linguistic code itself is occuring. These very early emerging skills can perhaps best be thought of as providing a bridge between primary linguistic activities and metalinguistic awareness. As Marshall and Morton (1978) suggest, "awareness arises out of devices for finding faults" (p. 228). So while they do in a sense reflect nascent metalinguistic ability, they are clearly not as sophisticated as later emerging skills in which language itself is consciously focused upon and manipulated.

The nature of the distinction between these early emerging metalinguistic skills and those acquired later was perhaps best captured by Jakobson (1960). Citing as examples various ways that language users elicit clarification of meaning in conversations, Jakobson suggested that "we practice metalanguage without realizing the metalingual character of our operations" (p. 56). Later emerging metalinguistic skills differ in that one not only focuses on the linguistic code, but the language user is often consciously aware of the focus and subsequent intentional manipulations of the code.

Metalinguistic skills in which children centrate on semantic content. The preoperational child's performance on several other metalinguistic tasks reflects his or her propensity to focus on the semantic content of language, rather than being able to shift attention to the linguistic medium used to convey that content.

This is evidenced by the nature of children's responses to several types of metalinguistic tasks, including those which tap their ability to differentiate word from referent, to segment sentences into words, and to make acceptability judgments regarding grammar.

In learning to reflect upon the properties of language, a child eventually becomes aware that language represents--that is, the word is distinguishable from the object it stands for. In tasks which attempt to assess this awareness, preoperational children are generally unsuccessful because they respond on the basis of a word's meaning rather than its form. For example, in a study by Berthoud-Papandropoulou (1978) children were asked to give examples of words with certain properties, e.g., long, short, and difficult. When asked for a long word, a typical response from a preoperational child would be to provide a word such as "train," because it refers to something long. Preoperational children cannot yet separately focus on the linguistic form. They focus on properties of referents rather than on properties of linguistic elements per se. This semantic bias of the preoperational child is also evidenced when they are asked to define what a word is. In this same study by Berthoud-Papandropoulou, one preoperational child responded, "A strawberry is a word because it grows in the garden."

A similar type of response has been noted when children are asked questions related to the arbitrary nature of language (i.e., the fact that the sound-meaning correspondence is an arbitrary one). Both Osherson and Markman (1978) and Vygotsky (1962) found that preoperational children will agree that an object's name can be changed, yet when they attempt to do so, attributes cling to the name when it is transferred. Thus, the child will agree that a cat can be called a dog, but he or she will also insist that the cat so called can also bark. Similarly, a dog called a cow will have horns. Here again, meaning prevails. Linguistic forms do not yet have their own identity apart from the meaning they encode;

they cannot be focused upon separately.

Preoperational children again reflect their semantic bias in a task which asks them to segment a sentence into the number of words it contains. An example from Berthoud-Papandropoulou (1978) is illustrative of the younger child's meaning focus:

> Examiner: Six children are playing. How many words?
> Child: Six.
> Examiner: What are they?
> Child: Me, my little brother, Christiane, Anne, Jean, etc. (p. 61).

This particular example, while illustrating a semantic bias, perhaps underestimates the preoperational child's abilities. The number "six" in the sentence may have confused the children. Indeed, other researchers have found that preoperational children are able to segment sentences into their component words (e.g., Ehri, 1975; Holden & MacGinite, 1978; Huttenlocher, 1964).

Children's performance on acceptability judgments provides yet another example of their semantic focus in responding to metalinguistic tasks during the preoperational stage of development. These tasks generally present both syntactically acceptable utterances, i.e., sentences in their natural word order, and sentences where natural word order has been permuted. Children five years of age and under appear to judge the truth value of an utterance (Bohannon, 1975; Gleitman, Gleitman, & Shipley, 1972; Hakes et al., in press; James & Miller, 1972). An example provided by Gleitman et al. illustrates the early semantic bias in responding to this type of task. In their study, one 5 year old responded that the sentence "I am eating dinner" was unacceptable. The child went on to explain that he did not like to eat dinner, showing the the response was based on the assertion and not the grammatical form of the sentence. In summary, there is "a tendency for younger children to judge sentences on the basis of what they assert rather than the linguistic manner in which they do so" (Hakes et al., in press, p. 105).

Not only is the preoperational child generally focused upon the semantic content of messages, it also appears that they are aware of only one meaning of a particular linguistic form. This corresponds with the tendency to centrate on one thing at a time and the lack of reversibility in the preoperational child's reasoning. These limitations preclude their being able to consider the same form as having two different meanings. For example, Asch and Nerlove (1960) studied 3 to 12 year old children's comprehension of dual function adjectives which refer to both physical and psychological properties (e.g., soft, hard, sweet, bitter). These investigators first assessed the children's literal comprehension; they were asked to point to the "sweet" one (a cube of sugar), the "soft" one (a powder puff), etc. Once literal comprehension was verified, the children were asked "Are people cold? Do you know any cold people? How do you know they are cold? What do they do or say when they are cold?" Asch and Nerlove found that children under six years had little awareness of the psychological meanings.

In a similar vein, it has been noted that preoperational children are also unable to resolve humor which uses linguistic ambiguity. Linguistic ambiguity occurs when the same word or sequence of words can have very different meanings. For example, in the following riddle, the resolution rests on the dual meaning of the word "club" as either a social organization or a large stick:

> Question: Do you believe in clubs for young people?
> Answer: Only when kindness fails (Shultz, 1974, from W.C. Fields).

Metalinguistic skills in which children centrate on linguistic form. As was mentioned earlier, preoperational children appear to be limited to focusing on but one aspect of the linguistic code at a time. Most often, as the previous examples indicated, that focus is upon the semantic content. Occasionally, however, the preoperational child appears to spontaneously focus on just the form of language, or demonstrates earlier success on tasks which require manipulations of

just the form of language.

Examples of spontaneous manipulations of linguistic form are found primarily in the diary studies or similar accounts by linguists of their own children. Some children show at least a rudimentary level of awareness of the sound system at an extraordinarily early age. Smith (1973) reports that a 2½ year old child, after a year of pronouncing "quick" as "kip," one day announced, "Daddy, I can say quick." Weir (1962) noted the following sequence in the bedtime monologue of her 2½ year old son: "Berries, not barries. Berries, not barries. Berries, not barries." Weir's data also gave examples of spontaneous rhyming, another manipulation of the phonological aspect of linguistic form.

Children also give early evidence of awareness of morphology. Leopold (1949) discusses how his daughter Hildegarde at age 3;3 one day amused herself by adding the diminutive -ie ending to all sorts of English words not usually so modified (e.g., "wallie, chairie, booksies") (vol. 4, p. 61). The author of this paper has noted a similar phenomenon in the language of a 3;11 year old girl named Niki. As she was stacking seriated sized rings on a graduated width column to form a pyramid, she uttered the following sequence:

What goes first?
This?
Let's see.
Yea.
Then this?
No.
Then this?
Yes.
This?
Yup.
Then this one?
Yuppie.
Then thisie?
Yup.
Then thisie?
Yippie.
Then thisie?
Nopie.
Then thisie?
Yippie.
You gotta be careful.
There.

Occasionally, children will ask spontaneous questions regarding morpheme boundaries. Gleitman et al. (1972) reported of a 4 year old who asked, "Mommy, is it AN A-dult or A-NUH-dult" (p. 139). Morgan (1979) notes a similar incident involving her 4 year old daughter, Kelly. Mother was explaining that Bonnie and Kathy live in the same dormitory, and Kelly asked, "Is the mitory for Bonnie's

door and Kathy's door?" While Kelly inaccurately placed the morpheme boundary, she indicated no awareness or confusion as did the child reported by Gleitman et al. Many of us remember our own similar inaccurate placement of morpheme boundaries in holiday songs, the Pledge of Allegiance, and other memorized routines.

There is indeed question regarding how consciously many of these above examples of spontaneous linguistic form manipulation are executed. As such, one might question if they are truly metalinguistic in nature. Furthermore, these children cited may be both linguistically and metalinguistically precocious. They may, as such, be extraordinary for their age rather than being representative of their peers. Further study with larger samples of children is needed to address this issue.

The above discussion cited examples of preoperational children's occasional spontaneous focus on linguistic form. This tendency has also been noted in their elicited responses to metalinguistic tasks presented to them. One set of metalinguistic tasks which ask children to focus exclusively on the form of language involve segmenting language into its component parts. Segmentation can involve various units: words, syllables, or phonemes. The ability to segment into syllables emerges earliest, beginning as young as four years of age (e.g., Liberman, Shankweiler, Fischer, & Carter, 1974). Children begin to be able to segment speech into words somewhat later, by approximately 5 or 6 years (e.g., Ehri, 1975; Holden & MacGinite, 1972; Huttenlocher, 1964). The ability to segment words or syllables into phonemes is the last to emerge, beginning at around 6 or 7 years (Liberman, 1973). By this time, children are in the concrete operational stage of development.

Hakes et al. (in press) and Read (1978) both discuss how this order of emergence is logical when one considers the nature of the acoustical signal.

Syllables have a physical correlate, i.e., they do exist in the actual acoustic signal. Words and phonemes have in common that they are both abstractions from the acoustical signal. "There is no simple physical basis for recognizing either a word or a segment . . . . [It appears, then] that children begin their analysis quite close to the phonetic level" (Read, 1978, p. 73). Phonological awareness, on the other hand, does not emerge until middle childhood, around 6 or 7 years.

The foregoing tasks all required focusing on linguistic form for successful resolution. Preoperational children also demonstrated this tendency to focus on form in one task where this focus proved to be unsuccessful. This appeared to be the response strategy children used in a task which required them to make synonymy judgments, i.e., determining when different words or groups of words have similar meanings. To perform this task accurately, one must make two judgments. First, they must determine that the forms are different and then that the meanings are identical. Hakes et al. found that children younger than six (preoperational) made synonymy judgments on the basis of form alone. That is, to judge sentences as non-synonynmous, they required that the forms be different. This strategy would result in correct judgments when the sentences were in fact non-synonymous and incorrect responses when they were synonymous. This is precisely the pattern Hakes et al. found with the younger children. "Their judgments of non-synonymous pairs were correct significantly more often than chance, but their judgments of synonymous pairs were incorrect significantly more often than chance" (p. 86).

Summary of preoperational metalinguistic skills. The metalinguistic abilities of the preoperational child have certain predictable characteristics. First of all, several skills which do emerge during this period serve to enhance the communicative function of language. This very aspect of the nature of these skills, however, leads one to question if they are truly metalinguistic. Second,

the preoperational child's propensity to centrate results in their being able to focus on only one aspect of the linguistic code at a time--either form or content, but not both simultaneously. Depending on the task demands of a particular metalinguistic skill, this results in the child sometimes performing successfully (e.g., segmenting words into syllables) and other times performing unsuccessfully (e.g., synonymy tasks).

Metalinguistic performance in the concrete operational stage

As children progress into the concrete operational stage, qualitative changes in their thought processes occur which would logically result in increasing success in their performance on metalinguistic tasks in general. Central to the qualitative changes occuring in children's reasoning ability as they make the transition from preoperational to concrete operational thought is the ability to decenter--to attend to more than one aspect of a situation simultaneously and to consider relationships between these aspects. Related to this is the emerging ability to shift one's thinking back and forth between aspects of a situation. These advances are reflected in a child's performance on the conservation of continuous quantity task mentioned earlier. Concrete operational children can focus on both the height and width of the column of water and thus realize and often explain that although the column of water has become taller, it has also become narrower. They also compare the post-transformational state to the pre-transformational state and are able to note that the amount of water has not changed simply by pouring it into a different beaker. This general flexibility of thought enhances performance on various metalinguistic tasks.

While all metalinguistic tasks initially involve focusing on linguistic form, each specific task can be conceived of in terms of manipulating either the form or content of the disembedded linguistic object. Still other tasks

appear to require a manipulation of both form and content. Successful performance on any metalinguistic task, then, can be thought of in terms of a two stage process. First, there is a necessary shift away from meaning to some aspect of linguistic form. The form may simply be provided, as when the child is presented with a word to segment into syllables. Some of these tasks are within the capacity of the preoperational child. In more naturalistic situations, the form is not provided. Here a first step involves "focusing and disembedding--the procedures which provide the object initially" (Franklin, 1979, p. 208). Next, metalinguistic performance involves some kind of manipulation of the linguistic object disembedded. Here the various tasks categorized as metalinguistic differ. Some require the manipulation of <u>form</u> (e.g., segmenting a word into phonemic units) whereas others require the manipulation of semantic <u>content</u> (e.g., moving from one meaning to an alternate meaning in ambiguity resolution).

The ability to decentrate allows the concrete operational child to perform the initial step--to consider language simultaneously as a medium for conveying meaning and as an object in its own right. This underlies the capacity to disembed forms from ongoing discourse. For example, to resolve lexical ambiguities, the child must focus upon and disembed the lexical element which is ambiguous. The manipulation stage of metalinguistic performance often requires reversibility. In the lexical ambiguity example, the child must be able to tack back and forth between and compare alternate meanings of the lexical item. This ability to compare two meanings is analogous to the child's ability to compare pre- and post-transformational states in correctly solving conservation tasks. As noted in the previous section, metalinguistic tasks which do not require the child to keep in mind and manipulate two things are often within the capacity of the pre-operational child.

Content manipulation: Decentrating on two meanings. Several tasks involve manipulating the meaning of a particular linguistic object. Perhaps even more accurately, these tasks can be conceived of as requiring the child to decentrate, i.e., to keep in mind more than one meaning of a linguistic form simultaneously. These tasks were beyond the capacity of the preoperational child, who could center on only one thing at a time. As discussed earlier, this skill is required in resolving lexical ambiguity humor. In this case, resolution involves shifting from one conventional meaning to another. Children begin enjoying success on this kind of task at around six or seven years, simultaneous with the onset of concrete operations (Fowles & Glanz, 1977; Hirsh-Pasek et al., 1978).

Comprehending and producing figurative language such as metaphor also involves shifting from one meaning to another. In this case, however, the shift is from a conventional meaning to a more hypothetical or possible meaning. Gardner and his colleagues (Gardner, Winner, Bechhofer, & Wolf, 1978) discuss the cognitive correlates of metaphor competence. Although pre-adolescents attain some metaphoric competence, it is possible that a flowering of this ability requires the attainment of formal operations (Elkind, 1969; Inhelder & Piaget, 1958). "The child's cognitive and linguistic capacities have now advanced to the point where he can classify objects in a variety of ways, reflect upon language as an object, and deal not only with the given objects of the present, but also with a universe of possibilities. Such intellectual growth is reflected in metaphoric tasks. No longer is the child restricted to a single comparison, nor to an approximate understanding of metaphor, he can now appreciate a variety of links between domains, hit upon the exact sense intended in a metaphor, and offer a detailed paraphrase of the figure" (Gardner et al., 1978, p. 21). Because of the hypothetical nature of the alternate meaning in comprehending metaphor, they are rarely within the capacity of the concrete operational child. Children in concrete

operations are capable of recognizing two conventional meanings, however, such as the physical and psychological meanings of dual function adjectives like "hard" (Asch & Nerlove, 1960).

Form manipulation. Metalinguistic skills in which only a form manipulation is required and a meaning focused strategy is not possible are often within the capacity of the preoperational child (e.g., segmenting words into syllables is a purely formal manipulation and there is no semantic strategy for approaching this task). Also, form manipulations which enhance communication are also performed successfully by preoperational children. In several other tasks requiring form manipulations in which preoperational children give inaccurate responses due to their semantic bias, the concrete operational child often enjoys success. For example, tasks which assess differentiation of word and referent require form manipulation. In naming a long word, the concrete operational child focuses on the number of letters in the linguistic form, and not, as would his or her preoperational counterpart, on the properties of the referent.

Making grammaticality judgments likewise requires a form manipulation. The sentence must be compared to stored knowledge of what is linguistically acceptable. The concrete operational child is able to ignore meaning in responding to this task. They judge instead the linguistic form used to convey that meaning.

Segmentation skills which require retaining meaning also await the onset of concrete operations before successful performance is possible. The ability to produce secret languages is illustrative. Here the task is to re-sequence phonemes by an artificially imposed rule, but also to convey a meaningful message at the same time. While some children are able to perform this task in the concrete operational period, Savin (1972) suggests that there is a great deal of individual variation in children's ability to produce secret languages.

The ability to segment words into phonemes does not require simultaneous

retention of meaning. The emergence of this skill at the onset of concrete operations cannot be easily explained by qualitative differences in the child's reasoning at this juncture, since other segmenting skills emerge in the preoperational period. Read (1978) suggests that we need to "question whether this awareness depends on instruction, or successful instruction depends on this awareness" (p. 73). It may be that the emergence of this particular metalinguistic skill is better explained by experiential factors such as instruction in prereading skills than it is explained by a general change in the child's reasoning capacity.

Content and form manipulations. Some metalinguistic tasks require that the child manipulate both the form and the semantic content of language simultaneously. Synonymy judgments are one such task. "Making this judgment requires constructing, retaining, and comparing representations of meanings of two sentences, for they are synonymous only if these semantic representations are (essentially) identical. In addition, the judgment requires some kind of representation of the sentences' superficial forms, for only if these are different can the two sentences be synonymous" (Hakes et al., in press, p. 85). Preoperational children in the Hakes et al. study had difficulty performing both content and form comparisons and often performed only the form comparison. Concrete operational children, on the other hand, judged on the basis of both form and content.

In cases of certain types of linguistic ambiguity such as morpheme boundary ambiguity, both form and semantic content are manipulated. For example, consider the following riddle.

> Question: Why is the man in the fish market stingy?
> Answer: Because his job makes him sell fish.

The resolution involves manipulating form by moving the morpheme boundary. In

this case, the alternate morpheme boundary is to combine the two words "sell fish" into the single word "selfish." Then, one must also shift from the meaning of "sell fish" to the meaning of "selfish." This form of ambiguity is not resolved until children are around 12 years of age. The late onset for success on this type of task is not surprising when one considers the complexity of the task demands.

Summary of concrete operational metalinguistic skills. In summary, the reasoning skills of the concrete operational child allows him or her to experience success on metalinguistic tasks which require either (1) comparing two conventional meanings of a particular disembedded linguistic form or, (2) manipulating form and simultaneously retaining semantic content. Some metalinguistic skills appear to require combinations of both of these above abilities.

Cognition: A part but not the whole

The preceding discussion provides convincing evidence that cognitive growth underlies a general flowering of metalinguistic ability. Two recurrent findings in this research, however, point out that there are other variables in addition to decentration and reversibility that influence metalinguistic ability. These findings are that (1) while many metalinguistic skills emerge around the same time as the onset of concrete operations, within the same child, some also emerge earlier than this time and others emerge several years later, and (2) there is some evidence for large individual differences in metalinguistic performance (e.g., Brodzinsky, 1977; Fowles & Glanz, 1977; Hirsh-Pasek et al., 1978; Kessel, 1970). These two findings indicate that there is more variability than can be explained by cognitive level alone.

The first source of variation fits well with the Piagetian concept of horizontal décalage. This refers to the often observed fact that children will exhibit

different levels of development with regard to problems requiring similar mental operations. Children's performance on conservation tasks are illustrative. While children conserve continuous quantity by 6 or 7 years of age, they do not conserve weight until 9 or 10 years. Conservation of volume emerges even later at around 11 or 12 years of age. In metalinguistic tasks, skills often likewise emerge over a several year period. For example, recall that lexical ambiguities are resolved by 6 or 7 years, while morpheme boundary ambiguities are not resolved until children are around 12 years of age. Possible reasons for this particular horizontal décalage were offered in the earlier discussion. It appears that lexical ambiguity requires only a content manipulation once the linguistic entity has been isolated. Resolving morpheme boundary ambiguity requires both form and content manipulations of the disembedded linguistic objects.

Numerous other variables may also influence metalinguistic performance. For example, Fowles and Glanz (1977) suggest that comprehending lexical ambiguity riddles requires some familiarity with riddles and riddle telling formats. Here social experience is needed in addition to cognitive skills. In resolving lexical ambiguity, vocabulary skills might also come into play. In other words, the child needs to be familiar with both meanings of the particular ambiguous word. In many metalinguistic tasks, undoubtedly some stimulus items are more difficult than others for a variety of reasons (e.g., grammatical complexity, lexical difficulty). Response demands also vary. In some tasks, the child may need only to demonstrate awareness in some way. In others, they may be required to explain.

The large individual differences in some metalinguistic performance also point out that the cognitive advances of concrete operations may be necessary, but they are not sufficient for the flowering of metalinguistic abilities.

Indeed, their existence alerts one to search for other relevant variables. One potential variable that has been repeatedly noted in accounts of individual children with precocious metalinguistic abilities is exposure to language games (Gleitman et al., 1972; Horgan, 1979; Slobin, 1978). Other sources of variation may include individual cognitive style. For example, Brodzinsky (1975) found that reflective children development a sense of humor earlier than impulsive children. The propensity to use verbal ambiguity humor may be related, then, to cognitive style variables. In a similar vein, Horgan (1979) noted that her metalinguistically precocious daughter Kelly had a high degree of tolerance for degraded stimuli in her symbolic play. Kelly would accept almost any object to stand for another, whereas most children prefer some perceptual similarity. Horgan postulated that "Kelly's tolerance for degraded stimuli may be related to her willingness to 'degrade' or alter established patterns" (p. 11). This may relate to her metalinguistic precocity. Undoubtedly, there are many other variables which contribute to metalinguistic performance that remain to be determined.

Summary

In this paper, the position was taken that children's performance on any metalinguistic task is influenced to an extent by the general cognitive strategies available to them at a given point in development. As such, the metalinguistic skills which emerge during the preoperational and concrete operational stages of cognitive development can be viewed in terms of how they reflect the child's abilities during each of these periods of development respectively.

Preoperational children are primarily attuned to the communicative function of language and are generally unable to subordinate this message oriented function. Corresponding to this focus, metalinguistic skills which enhance

the communicative function of language, such as correcting errors in ongoing discourse, begin appearing early in the preoperational stage of development. Also characteristic of preoperational children is their capacity to focus on only one aspect of a situation at a time. In metalinguistic performance, this focus results in their being able to focus on only one aspect of the form or content of language at a time. When a semantic content strategy is possible, these children often exercise this option in performing on metalinguistic tasks. Occasionally, they are able to focus solely on the form of language. This latter strategy generally occurs when a semantic content strategy is not possible. Depending on the nature of the particular task, the response strategies of the preoperational child sometimes result in successful performance. More often, however, he or she performs incorrectly.

With the ability to decentrate--to focus on more than one aspect of a situation simultaneously--which emerges with the onset of concrete operations, success on more complex metalinguistic tasks is achieved. The concrete operational child is able to subordinate the meaning of messages and focus on the linguistic code used to encode them. Furthermore, they can consider two meanings of a particular linguistic form at a time. In general, the reasoning skills of the concrete operational child results in his or her success on a wide range of metalinguistic tasks.

While more evidence is clearly needed to support the direct relationship between cognition and metalinguistic performance postulated in this paper, the indirect evidence cited strongly supports such a position.

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